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PROFILES OF DIALOGUE FOR REPAIRING FAULTS IN ARGUMENTS FROM EXPERT OPINION

Abstract. Using the profiles of dialogue method we identify a species of *ad verecundiam* fallacy that works by forestalling of questioning in arguments from expert opinion. A profile of dialogue is a graph structure used to model a sequence of speech acts surrounding both the putting forward of an argument and the response to it at the next moves in a dialogue. The method is applied to a case of cross-examining a software engineer in a legal deposition in a case of intellectual property litigation.

Keywords: arguments from authority; argument from expert opinion; profiles of dialogue; examination of expert witnesses; argument graphs; *ad verecundiam* fallacy

1. Introduction

Profiles of dialogue [11, 21] are schematics modeling local sequences of moves and countermoves in a dialogue to indicate how the sequence should properly proceed according to the global dialogue protocol. The motivation for establishing the profiles of dialogue method lies in applying formal systems of dialogical logic established by Lorenzen and Lorenz [14] and formal dialectic proposed by Hamblin [8] to argumentation problems such as those concerning informal fallacies. The features of these two approaches to formal dialogue systems that turned out to be particularly important in developing the profiles of dialogue method were: (i) their focus on the structure of dialogue conceived as a sequence

of moves of the proponent and the opponent, and (ii) the aim of building formal models of argument [13, p. 72].

The method of determining profiles of dialogue has been employed within various traditions and approaches to argumentation and with respect to diverse communication phenomena. Van Eemeren [19, p. 98] used profiles to model sequential patterns of argumentative moves made by participants in a critical discussion and investigate strategic maneuvering in argumentation. Walton [23, pp. 37–38] first used the profiles technique as an argumentation tool[1], applying it to the fallacy of many questions. Krabbe [11] applied it to relevance criticisms, Walton [25] to arguments from ignorance, Krabbe [12] to equivocation criticisms, and Krabbe [12], Van Eemeren et al. [21] and Walton [27] to studying shifts in burden of proof and presumptions arising from them.

In this paper, we apply the profiles method to problems in modeling the *ad verecundiam* fallacy. *Argumentum ad verecundiam* is generally understood as an attempt to intimidate an opponent by citing a respected authority (e.g. [6]). The species of the fallacy we select as the target of our analysis is the kind of argumentation from authority that puts forward an argument from expert opinion in such a forceful manner that the respondent is intimidated, blocking off further critical questioning. We model this strategic maneuver by using pairs of profiles where each member of the pair is a directed graph. We show how our dual version of the profiles method may be employed as a tool representing sequences of speech acts surrounding both the putting forward of an argument from expert opinion and the response to it given by the other party. A descriptive profile of dialogue is used to build a graph representing a sequence of moves that is inappropriate or problematic. A normative profile of dialogue represents the permissible sequence of speech acts (moves in a dialogue) for each party. The comparison between the two sequences provides a method that can help an argument analyst as part of the process of collecting and structuring evidence for judging whether a fallacy of *argumentum ad verecundiam* has been committed or not in a given case.

A negative finding of the paper is that despite the clear linkage between arguments from expert authority and the *ad verecundiam* technique, the existing argumentation scheme for argument from expert opin-

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[1] Krabbe [12, p. 158] wrote that although there are no doubt earlier uses of the profiles technique to be found, the first use of them going by that name occurs in Walton [23, pp. 67–70].

ion does not entirely grasp the key elements of fallacious *ad verecundiam* arguments. The paper moves on from there to lay the groundwork for establishing a new approach to the traditional *argumentum ad verecundiam* by extending the profiles of dialogue method to capture the structure of appeals to authority in cases where sophistical use of the *ad verecundiam* technique is a problem. The application of the profiles tool to a case of a legal deposition illustrates this new approach to the *ad verecundiam* fallacy.

2. Arguments from Expert Opinion

We begin by considering a standard version of the scheme for argument from expert opinion [24]. A is a proposition (statement). S is a subject domain that can be taken as a field of expertise.

Expertise Premise: E is an expert in subject domain S.
Expert Opinion Premise: E asserts that proposition A is true (false).
Domain Premise: A is within S.
Conclusion: A may plausibly be taken to be true (false).

If a respondent asks any of the six basic critical questions [24, p. 223] appropriate for the appeal to expert opinion, the proponent must either give a satisfactory answer to the question, or give up the argument from expert opinion.

1. *Expertise Question*: How credible is E as an expert source?
2. *Field Question*: Is E an expert on S?
3. *Opinion Question*: What did E assert that implies A?
4. *Trustworthiness Question*: Is E personally reliable as a source?
5. *Consistency Question*: Is A consistent with what other experts assert?
6. *Backup Evidence Question*: Is E's assertion based on evidence?

Since two critical questions on this list, i.e., the expertise question and the trustworthiness question may appear to point to a similar feature of an argument from expert opinion (namely expert's *ethos*), it is justified to explicate the substantial difference between them. The expertise question asks about the expert's depth of knowledge in the field. The trustworthiness question asks about ethical matters, such as whether the expert might be biased, or may have lied in the past [15]. The type of dialogue that is involved when a layperson converses with an expert

to solicit the opinion of the expert is called examination dialogue [26]. Examination dialogue is familiar in law, and it is very commonplace for lawyers to have to examine experts in court, and in particular to cross-examine an expert offering testimony on the opposed side. How to conduct examination dialogues is an important skill for trial lawyers.

Once we have the argumentation scheme and the matching set of critical questions, it is easy to deal with many of the typical kinds of instances of the *ad verecundiam* fallacy given in the logic textbooks. Typical cases are ones where the source cited is not really an expert at all, or where the expert is not named, or where the source is an expert in the field different from the one that matches the topic or fits the field of expertise matching the subject domain of the proposition at issue [24,27]. The critical questions are specially designed to repair the fault encountered in these kinds of cases by indicating the gap that needs to be filled in the argumentation scheme for the premises to support the conclusion.

Many of the most vexing and problematic examples of argument from expert opinion, however, are not of this relatively manageable kind. These more complex and difficult to evaluate examples are cases where the argument from expert opinion is put forward in such a manner as to make it appear inappropriate to put forward counterarguments, or even critical questions, that might challenge the authority of the expert. These are more difficult cases because they cannot be evaluated using only the argumentation scheme for argument from expert opinion and its matching critical questions, or any of the more familiar devices such as combining argumentation schemes with argument diagrams. These cases require some extended kind of structure that can combine argument diagrams and argumentation schemes with some model of how a questioner or critic responds to an argument from expert opinion. Such an extended model has to be able to capture the notion of the sequence of exchanges in the form of speech acts between two, or even several participants taking part in what is supposed to be some normative framework such as a critical discussion that has normative rules governing the moves of each party as they take turns putting forward arguments and responding to them [18]. It is just this sort of model that will form the framework of the method of profiles of dialogue put forward in this paper and meant to be applied to problematic cases of argumentation.

In order to explain the above difficulties of argument evaluation, we will now briefly point to three most general and quite intuitive steps of the procedure, namely (i) argument identification, (ii) argument analysis

and (iii) argument evaluation. First, the task of argument identification proceeds by identifying the argumentation scheme fitting the text of the argument to be examined. Second, the task of argument analysis proceeds by doing such things as considering alternative interpretations of the text, looking for implicit premises, and so forth. Third, the task of argument evaluation proceeds by weighing the given argument in relation to other relevant pro and con arguments in the given case. In practice, these three tasks are interconnected, but here it can be noted that issues of burden of proof are especially important in argument evaluation. In such cases, a simple argument diagram by itself is generally not a powerful enough tool to evaluate the argument in such a way that fallacies and the shifts of the burden of proof can be analyzed and studied.

Here we have to look at the formal dialectical structure of the argumentation, the speech acts put forward as moves by each side, the responses made to them, and whether the assertions, arguments and other speech acts meet the protocols for the structure of the dialogue as a whole. The profile of dialogues technique, as we show, is the tool needed to carry out this task effectively. Hence, by claiming that there are difficulties in evaluating some complex cases of arguments from expert opinion, we do not claim however that such cases should be left aside in argument studies. The third step of evaluating arguments should be preceded by a careful identification and analysis. Our hypothesis is that the profiles of dialogue method is a tool that by making identification and analysis plain allows us to identify and repair faults in argument from expert opinion.

When someone who is a qualified expert puts forward an opinion in a domain of expertise that matches that of the subject matter of the examination, provided the argument thus expressed fits the argumentation scheme for argument from expert opinion, a presumption is lodged in place in favor of the acceptability of the claim made. But there can be a shift in the burden of proof, and accordingly canceling of this presumption in favor of the expert opinion is inappropriate critical question is posed. Now the burden of proof is on the proponent who put forward the expert opinion to respond appropriately to the question. Otherwise the presumption in favor of the expert opinion is removed. In short, as an argument from expert opinion is put forward and critically questioned by someone who is skeptical about it, there is a shifting back and forth of the burden of proof from one side to the other. The dialectical procedure is one in which critical questions are asked and answered [27].

These observations pose a problem, however, for those who wish to analyze arguments from expert opinion with the aid of a graph structure represented by a typical argument diagram. For instance in such a diagram, the nodes of the graph represent propositions, and cannot normally be used to model questions, such as the asking of critical questions. So how can we evaluate the argumentation that takes place during an examination dialogue where an argument from expert opinion is put forward by one side and critically questioned by the other side? The answer is that we have to begin by understanding normative frameworks of argumentation [31].

To model problematic cases of the *ad verecundiam* fallacy and judge whether or not a given argument from expert opinion is acceptable in a given case depends not only on the requirements of the argumentation scheme having been met, but also on how dialectical extensions of the argument respond to criticisms, and especially to criticisms posed by the asking of appropriate critical questions matching the scheme. The distinction between criticisms to *argumentum ad verecundiam* and critical questions may lead us to ask what other criticisms could there be than those which are normally included in the critical questions. In order to make this distinction plain we may notice that the general methodology of argumentation is to evaluate an argument by comparing it to relevant pro and con arguments that may be brought forward to support or attack it. In general, there can be any number of these pro and con arguments. The critical questions matching the argumentation scheme merely represent standard questions that can be used to help a logic student, or a user of any kind, identifying some weak points characteristic of this type of argument that can suggest ways of moving forward to more fully evaluate the argument.

It needs to be also noted here that the list of critical questions above does not represent all the possible critical questions that might be asked in a dialogue attempting to evaluate the acceptability of an argument from expert opinion. It represents only the basic ones that can be used to help teach a critical thinker how to respond to arguments from expert opinion. There can be sub-questions of each critical question, resulting in a more extensive sequence of argumentation in a dialogue between the two parties. This can be represented in the normal way by a larger argument diagram representing how the pro and con arguments are weighed against each other.

An evaluation of a given instance of an argument from expert opinion, such as might take place in a legal examination of an expert witness in a trial, must take the form of a dialogue, a sequence of pro and con arguments [4, 27]. Such a dialogue is represented normatively by a sequence of speech acts representing the arguments put forward and the counterarguments responding to them in a given case.

In formal models of examination dialogue, each party takes turn asking or answering questions by using speech acts. These speech acts are connected together in sequences called profiles of dialogue [11, 19]. For example a profile of dialogue could be an interviewer asking an expert a question, the expert responding to that question by giving an answer, and the interviewer following up by asking about some point in the answer that needs further clarification. It is a normal part of such a dialogue that the interviewer needs to ask critical questions, and in the case of a cross-examination some of these critical questions can be quite argumentative. For example the interviewer might point out that the expert is being paid to testify and therefore the question arises whether this expert may have a bias. Or the interviewer might point out that other leading experts disagree with the opinion put forward by this expert.

There is a presumption in favor of an expert opinion, provided it meets the requirements of the scheme for the argument from expert opinion [24]. When it comes to studying the *ad verecundiam* fallacy, the problem is that critical questioning may be deflected, interrupted or shielded off altogether because the argument from expert opinion has been put forward too forcefully, or because of the general presumption in favor of an argument from expert opinion, the audience tends to defer to the expert authority and hesitates to question it. The factor of deference comes in because certain kinds of questions can be reasonable, even if they are fairly aggressive in attacking the credibility of the expert. If such questions are posed in the right way, they do not derogate from the deference due to the legitimate expert that is being questioned.

After all, experts know about the subject matter in their fields because they have special training in the field, whereas the interviewer, a layperson in that field, cannot challenge the expert directly as if she were also an expert. Doing so would be claimed (by a party who puts forward an argument from expert opinion) to be a breach of respect due to a genuine expert by failing to pay due deference to the special knowledge possessed by the expert. On the other hand, the assumption that experts always have to be right, and that laypersons would be immodest to

question this because of the deference that should be paid to an expert, gives rise to the possibility of fallacious use of arguments from expert opinion. Such arguments can be used to unfairly suppress the capability of the interviewer to ask the proper critical questions that are needed to make sense of and to evaluate the expert's opinion that has previously been offered.

To build a dialectical structure that can be used to judge in a given case whether an argument from expert opinion is reasonable enough as it stands, or should be placed into the fallacious category of *ad verecundiam*, we now turn to seeing how moves in a dialogue are modeled as speech acts that can be connected together in an orderly way to normatively represent the dialectical structure of the sequence of argumentation in such cases.

3. Speech Acts

In a persuasion dialogue of the kind represented by the critical discussion [20], as well as in the Socratic dialogues widely studied in ancient philosophy, there are two speech acts that are fundamentally important. One is the action of asking a question of the yes-no type [8, 9]. This is the speech act of asking whether the hearer thinks a proposition selected by the speaker is accepted by the hearer or not. The other is the speech act of putting forward an argument. This is the speech act of making a claim C and making an attempt to get the hearer to accept C by offering a set of premises from which C can be derived by an a inference. In formal argumentation systems such an inference is labeled by an argumentation scheme, for example the scheme for argument from expert opinion. In such a system, the speech act is the input and the output is the immediate effect of the move that automatically takes place in the record of the dialogue once the move is made. The dialogue itself is defined as a sequence of pairs of such speech acts, and typically path of argumentation consisting of pro and con arguments runs through the sequence, holding it together.

Table 1 defines some of the main speech acts. It shows how argumentation characteristic of problems related to the *ad verecundiam* type of argumentation can be represented in a dialogue framework with speech acts and dialogue moves. The move made the speaker is the input, and then according to the dialogues rules, the output produced is the effect of the speech on the hearer, in conformity with the protocol [2, 17].

Speech Act	Speaker's Move	Hearer's Commitment
Yes-No Question	A?	Hearer must commit to A or not-A.
Assertion	Assert A.	Hearer becomes committed to A.
Concession	Accept A.	Hearer becomes committed to A.
Retraction	No commitment A.	A is immediately removed from speaker's commitment store.
Put an Argument Forward	$A_1, A_2, \ldots, A_n$ therefore C.	Hearer must either accept C or attack the argument.
Why-question	Why A?	Hearer must put an argument for A forward or retract A.

Table 1. A Speech act representation of the *ad verecundiam* technique

Although Table 1 contains our own attempt at presenting the structure of *argumentum ad verecundiam* in terms of speech acts, comparable tables of speech acts resembling this one to some extent are now common in the literature. For example Prakken [17] proposes the comparable (but structurally different) table of typical speech acts.

Note that a why-question is not meant to ask for an explanation in this example. It meant to request an argument to support a claim, and the normal protocol it brings with it is a requirement of burden of proof (evidential burden), as shown in the bottom row.

Let us examine the other speech acts, starting from the top. A statement (proposition) is an entity that is asserted in an affirmative sentence. It has the property of being true or false. This way of framing the matter may make an impression that this approach excludes claims to acceptability. However, from our dialogue-oriented point of view, acceptability is the main notion. We use the device from Hamblin's account of the arguer's 'commitment store' [8]. This is simply a set of propositions, and new propositions can be inserted into it, or propositions that were previously accepted can be deleted from it, depending on the speech acts put forward by the participants at the various moves. Nowadays it is called a knowledge base. For example if a participant asserts a particular proposition, it immediately goes into his commitment set. If a participant retracts a particular proposition, it is immediately deleted from his commitment set.

An assertion, in contrast is a speech act made as the content of a move in a dialogue. Commitment to a proposition is also a speech act that signifies acceptance. Each participant in a dialogue has a commitment

set (commitment store). At each move statements (propositions) are inserted into an agent's commitment set or removed from it, depending on the type of move made and the protocol (procedural rules) for the dialogue. In the model of persuasion dialogue in [30, p. 123] commitment is controlled by five factors: (1) the type of speech act made at a given move, (2) the prior moves in the dialogue, all of which have been recorded, (3) the type of dialogue in which the move was made (such as persuasion dialogue), (4) the communal goal of the dialogue, made clear at the opening stage, and (5) the rules for that type of dialogue.

As arguments contain statements that are asserted, we need to clarify the difference between an argument, a speech act and an assertion. In our approach, a speech act is essentially the content of a move in a dialogue. Every speech act has preconditions and post-conditions defined by the dialogue protocol. When a speech act is put forward as a move, the other party (normatively speaking) has to respond appropriately to that move according to the protocols for the dialogue. An assertion is a particular type of speech act.

It is more complex to define what an argument is. Curiously, this particular concept is highly contested within the field of argumentation studies. Everybody seems to have a different theory. But perhaps to explain the distinction in a simple way, an argument is a complex unit made up of (1) premises and conclusion that are propositions (points in the graph) and (2) and an inference (an arrow in the graph) joining a set of premises to a conclusion. However, in reality things are not that simple, because it may be possible for an argument to have more than one conclusion (multiple conclusion arguments), and it is possible to chain arguments together forming a sequence of argumentation. Also, it is generally important that one of these propositions be designated at the outset as the ultimate conclusion of the argument (the root of the tree), according to the traditional stasis theory. The speech act of putting forward an argument is normally a claim made by an arguer that the ultimate conclusion should be acceptable to the respondent in the dialogue, based on the respondent's acceptance of the premises (and also on the inferential link (argumentation scheme) joining them to the conclusion). The explication of how the instance of arguing is founded in dialogue moves has been proposed using the Inference Anchoring Theory [3] that allows us to represent links from transitions between moves in a dialogue to inferential premise-conclusion structures.

Next, let us concentrate on the bottom two speech acts in Table 1. The speech acts that are most central to formal argumentation dialogue structures of the kind that have been investigated so far are those of making an assertion, putting forward an argument and challenging an assertion or argument [9, 16]. Making an assertion is to make a claim that some proposition is true, or at any rate acceptable. An assertion is challenged by requesting that the proponent prove it. This move means essentially that the proponent has to give some argument to support the claim. There are three ways an argument can be attacked in such a formal dialogue system, by undermining, rebutting or undercutting. The hearer can attack one or more of the premises (undermining). The hearer can attack the conclusion of the argument (rebutting). Or the hearer can attack the inferential link between the premises and the conclusion (undercutting).

We can already see that some of the speech acts shown in Table 1 are closely connected to certain informal fallacies well known in the argumentation literature. Krabbe [11] showed that the following sequence of dialogue is often associated with the fallacy of argument from ignorance. The so-called argument from ignorance (or argument from lack of evidence) has this form: A has not been proved to be true (as far as we know), so we can conclude that A is false. As can be shown by the dialogue below, arguments from ignorance are also associated with problems about shifting of a burden of proof.

Speaker: Assertion P.
Hearer: Why-P?
Speaker: Why not-P?

The rule for responding to a why-question, as shown by the entry in the table of speech acts in Figure 1, is connected to the fallacy of many questions [8, pp. 38–40]. The profiles method has already been applied to such questions [23, pp. 65–71], where it was shown using the profiles method that such questions are not always fallacious. For example, in a trial where the defendant has already admitted committing the crime of child abuse, the prosecutor attorney could quite reasonably ask him the question 'Have you stopped committing child abuse?' and the question could be quite legitimate (both legally and logically). Of course, in a different context of dialogue, asking the same question could be fallacious.

4. Profiles of Dialogue

To determine whether a given instance of what looks like an *argumentum ad verecundiam* is fallacious or not, the argumentation schemes for argument from expert opinion [24], along with the sets of critical questions matching these schemes, is the beginning of a general method. But according to our analysis, collecting evidence to show whether the argument is used in the given instance is fallacious, one needs to see how the argument was employed in a given dialogue setting. In many instances, however, it is not necessary to bring in the full apparatus of formal dialogue structures for the six basic types of dialogue [30, p. 66] such as persuasion dialogue or negotiation dialogue. It is enough to look at a short segment of dialogue and examine the textual evidence offered by seeing how the speech acts are put forward and responded to in that segment.

For this purpose, a particularly useful tool is the profile of dialogue [11, 19, 21, 23, 28]. A profile of dialogue is a relatively short sequence of moves (speech acts such as questions and replies) in a dialogue that represents how the sequence of exchanges should proceed, according to the protocols of the type of dialogue the participants are supposed to be engaged in. The profile of dialogue argumentation tool originated from [23, pp. 37–38], where it was used to provide a model of the fallacy of many questions. It has also been shown in [21, 27] how it can model shifts in a burden of proof and presumptions arising from them. Profiles of dialogue were described by Krabbe [11] as 'tree-shaped descriptions of sequences of dialectic that display the various ways a reasonable dialogue could proceed'. According to Krabbe [11] and van Eemeren et al. [21], such profiles can be used to assist an argument evaluator to model the textual evidence in a given case 'without having to go through all the technical preliminaries for the complete definition of a dialogue system' [11, p. 277]. A profile of dialogue can be used to abstractly represent the sequence of speech acts surrounding both the putting forward of an argument and the response to it by the party to whom the argument was directed. The profile of dialogue is embedded in the overarching structure of a formal model of dialogue containing argumentation schemes [31]. Such dialogue models are now in the mainstream of argumentation methods in artificial intelligence.

When looking to allied approaches in contemporary argumentation studies, we may observe that the pragma-dialectical theory of argumen-

tation [19, p. 98] also made use of dialectical profiles as sequential patterns of moves of the participants in a critical discussion that have a dialectical aim at a particular stage of a critical discussion. The first difference between the pragma-dialectical approach to dialogue profiles is that whereas the pragma-dialectical profiles are representations of all analytically possible moves in an ideal discussion called the critical discussion, the approach proposed in this paper aims at proposing a formal model of the dialectical structure [27, 28]. The second difference is that our account of dialogue profiles not only indicates how the dialogue should ideally have gone, but also how dialogues actually proceed. The comparative profiles technique proposed in this paper consists of comparing normative profiles of dialogue to descriptive ones. By doing that it allows us to identify some typical fallacies that might be identified as sequences of improper dialogue moves. The proposed technique is specifically designed for the identification and evaluation of fallacies, most notably shown by our application of it to a problematic aspect of the *ad verecundiam* fallacy.

The problem with this way of responding to the asking of an appropriate critical question is that it suppresses the capability of the questioner, or anyone else for that matter, from properly evaluating the argument from expert opinion. Indeed, it has a tendency to shut down the dialogue altogether from proceeding any further. It is even suggested in [24, p. 246] that this type of response is the identifying mark of the fallacious use of the argument from expert opinion. This suggestion can be combined with the analysis of Walton and Koszowy [29] that portrays using an epistemic expert as a deontic authority as a common vehicle for carrying out precisely this type of strategic maneuvering to make it seem inappropriate that critical question should even be raised at all.

To model this kind of situation, we first need to define a a profile of dialogue as a graph structure that represents how a sequence of argumentation should ideally go in a formal dialogue structure such as that of Walton and Krabbe [30]. To begin with this project we need first of all to define the notion of a graph, a well-known mathematical structure commonly used in artificial intelligence argumentation models. A graph is here defined as an ordered pair $\langle V, E \rangle$, where E is a subset of the two-element subsets of V [32, Ch. 4]. V is a set of vertices, sometimes called points or nodes. E is a set of edges, sometimes called lines or arcs. It is customary to represent a graph as a diagram where the nodes are joined by lines. For example, in a standard argument diagram [5],

the vertices are propositions (premise or conclusions) and the edges are inferences joining the propositions together. The graph is defined as a directed graph if every pair of its elements $\langle V, E \rangle$ is an ordered pair. So a directed argument graph has arrows representing the direction of an inference. A walk is an alternating sequence of points and lines v_0, x_1, v_1, ..., v_{n-1}, x_n, v_n, in which each line is incident with the two points immediately preceding and following it. The walk is closed if $v_0 = v_n$. A closed walk is a cycle if its endpoints are distinct and $n \geqslant 3$ [10, p. 13]. A tree is a graph that contains no cycles. A typical argument diagram is a graph.

We need to extend this notion of a graph by at least indicating how graphs are used in some current formal and computational argumentation systems as employed in artificial intelligence. We will choose to use the Carneades Argumentation System (CAS), a formal argumentation system that actually defines argumentation as a graph structure and that uses argument diagrams of the kind familiar to those working in argumentation studies. These argument diagrams are in fact graphs of a particular kind [7], called bipartite graphs. A *bipartite graph* is one where the vertices (nodes) are partitioned into two subsets. Figure 1 is an argument diagram in the format of CAS that models the sequence of argumentation as a bipartite, directed, labeled graph, consisting of these two kinds of nodes. In the example shown in Figure 1, the rectangular nodes represent propositions (statements) and the circular nodes represent the arguments. The argument diagram shown in Figure 1 is a bipartite graph meaning that no two rectangular nodes are adjacent to each other, and no two circular nodes are adjacent to each other. CAS is currently under development and at the present time there are four versions that have been implemented and are available on the Internet at https://carneades.github.io/. Version 2 is the system used in this paper. In version 2, the circular nodes in a CAS argument diagram are labelled as representing pro or con arguments. A pro argument supports the proposition or argument it points to, while a con argument attacks the proposition or argument it points to. In order to show how our method of profiles of dialogue will model *ad verecundiam* arguments generally, we begin with an abstract example, and from there we test the profiles method on a real example.

5. An Abstract Example of a Problematic Use of Argument from Expert Opinion

The logical aspect of the *ad verecundiam* fallacy can be represented as a profile of dialogue, since its effect is to forestall questioning of the cited source by exploiting the deference to expertise of the party to whom the argument was directed. By 'logical aspects of *argumentum ad verecundiam*' we refer to the inferential structure as indicated by the argumentation scheme for this type of argument, specifically in this paper for the scheme for argument from expert opinion, but also including other kinds of argument from authority such as the argument from deontic authority [29]. By using this label we draw a distinction between the logical aspects and the broader dialectical aspects, referring to the framework of dialogue in which the argument is embedded.

The profile of dialogue gives the capability to distinguish between a sequence of arguments that follows the dialogue protocol regulating which kinds of moves are permitted or forbidden in a particular type of dialogue, and how these moves need to be ordered, to make the sequence fit the protocol. If a different kind of sequence does not fit the protocol, it is simply rejected by the profile model. It represents a sequence of moves that is normatively incorrect, in relation to the dialogue protocol. This kind of analysis using the profiles of dialogue enables us to identify specific patterns in profiles that fit characteristics associated with the fallacy. The specific pattern characteristic of the fallacy is that of forestalling questioning of the cited source by the respondent, by such moves as not allowing critical questioning of the experts claim, or not allowing counterarguments that might be directed against it, simply because admitting them would be evidence of not giving sufficient deference to the opinion of an expert.

Consider the example shown in Figure 1 representing an abstract dialogue exchange in a persuasion dialogue where the proponent P has the task of persuading the respondent R to accept a proposition A, and employs argument from expert opinion to achieve this aim. The respondent begins the dialogue by asking a why-question that shifts the burden of proof onto the proponent's side to provide evidence to support the claim that A is acceptable.

To begin to evaluate the sequence of argumentation in this case, we first have to look back to the list of critical questions appropriate for responding to an argument that fits the scheme for argument from

#	Speech Act	Pt	Move	Evaluation
1	*Why-question*	R	Why A?	Appropriate
2	*Argument*	P	E is an expert on S, E asserts that A, and A is in S.	Appropriate
3	*Question*	R	What evidence is E's assertion based on?	Appropriate
4	*Argument*	P	You are not an expert in this subject, so you could not understand the evidence.	Inappropriate (Blocker)
5	*Assertion*	R	To evaluate the argument, I need to find out what evidence E's opinion is based on.	Appropriate
6	*Argument*	P	You cannot evaluate the evidence because could not understand it.	Inappropriate (Blocker)

Table 2. A dialogue illustrating a typical *ad verecundiam* problem

expert opinion. In particular, it is useful to look at the critical question 'Is E's assertion based on evidence?' When this critical question has been put by a respondent to a proponent who has just put forward an argument from expert opinion, the proponent is automatically restricted by the dialectical protocols of a persuasion dialogue to putting forward certain speech acts at the next move. One legitimate response open to the proponent is to furnish some evidence that the expert has provided showing that her claim that statement A is true was based on evidence. Otherwise, if it is not known whether the expert's opinion was based on any evidence, the proponent needs to admit such a lack of evidence. If the expert is present in a three party dialogue situation, she can be asked the question: what is your evidence to support proposition A? If she fails to present evidence, or in the two-party situation where the expert is absent, the proponent cannot furnish any evidence in response to the critical question, then the argument from expert opinion fails.

Figure 1 represents a descriptive profile of dialogue for the example above. The root of the tree, shown at the top, shows a rectangular node with rounded corners containing a speech act, a why-question, put forward in the dialogue as a move of the respondent. The proponent is designated as the party putting forward the argument from expert opinion, shown just below. The respondent's next move is to ask for evidence. The proponent asserts that the question about evidence does not
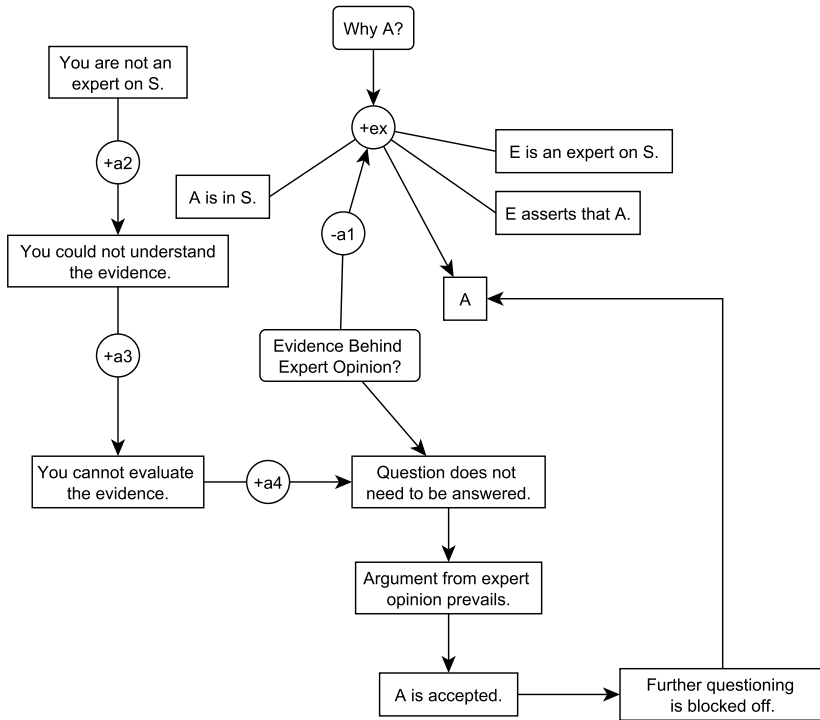
Figure 1. Descriptive profile of dialogue for problematic argument from expert opinion

need to be ensured and backs up this assertion by the three arguments shown on the left. Hence the argument from expert opinion prevails, as shown on the right.

A profile of dialogue can be computationally modelled as a dialogue template [2] a schematic representation of a move and reply in a dialogue and its underlying argument structure. Figure 1 is an argument diagram in the format of CAS except that it uses a third node, the rounded rectangular node, to represent questions. This style of diagramming is an extension of CAS that uses a tripartite directed graph structure.

In this instance the tripartite graph structure is used to model a sequence of moves in a dialogue rather than its more familiar use in logic as a set of premises and conclusions in an argument diagram. The graph provides a model of how a connected sequence of moves in the di-

alogue can properly go, following the dialogue rules (protocol) showing which kinds of moves are permissible or obligatory following a previous move by the other party. Ideally, the arguers take turns, and respond appropriately to each move of the other party, building up a connected sequence of moves represented by the profile [1].

As the sequence of moves represented by the descriptive profile in Figure 1 proceeds from the root node shown at the top through the next two moves, the proper sequence that such a dialogue is supposed to take is illustrated. The respondent asks a why-question, the proponent puts forward an argument from expert opinion, assuming that E is an expert source and that E has stated that A is true, according to the proponent. At the next leaf in the tree the respondent asks the critical question of whether E's assertion was based on evidence.

Next let us consider the remainder of the argumentation shown in Figure 1. At the top, when the respondent asks the why-question, the proponent put forward an argument from expert opinion to answer the question. The three premises fit the scheme for argument from expert opinion, as indicated by the name of the scheme ex in the round node. Hence the conclusion A follows (defeasibly) as indicate by the arrow to the rectangle containing A. In response to the argument from expert opinion, the respondent asks the sixth critical question from the list, asking for evidence to back up the argument. So far, there is no problem. But at this point, things start to go wrong.

At the next level, the proponent claims that the question does not need to be answered. This answer is not allowed in the persuasion dialogue because the proponent is obliged to either fulfill the burden of proof by supplying some evidence or retract A. This rule is one of the protocols for this type of dialogue. The profile started out by representing only permissible speech acts in the sequence of moves for each party, but now it represents a different kind of move that is inappropriate, and that even functions as a red flag suggesting that a fallacy may be about to be committed. How do we know this? We can learn it by peeking ahead at Figure 2, but let us postpone this until we examine what happens next in Figure 1.

Looking back to Figure 1, we see on the left that the proponent has backed up his assertion that the question does not need to be answered by the sequence of argumentation shown on the left containing arguments $a2$, $a3$ and $a4$. The proponent argues that since the respondent is not an expert, he could not understand the evidence, and she concludes

from this that he cannot evaluate the evidence. Here we have very clear indications from the profile of dialogue that the proponent is committing an *ad verecundiam* fallacy. But remember that this is still a descriptive graph. We are not yet considering the normative profile. As far as the descriptive graph is concerned, the argument from expert opinion prevails against the objection put forward by the respondent and therefore not only is the proposition *A* accepted, but by this means the proponent has seen to it that further questioning is blocked off. It is the blocking off of further questioning that assures that the claim *A* is secured by the argument from expert opinion, as shown by the bent arrow on the right leading to the conclusion *A*. This latter part of the graph displays the definitive evidence that the instance of argument from expert opinion shown in the profile represents a sequence of argumentation that results in the dialogue being blocked off from making further progress towards its goal of resolving the original conflict of opinions by means of rational argumentation.

The way the profiles of dialogue technique works is by constructing two directed graphs, each of which represents a sequence of speech acts as moves in a dialogue between two agents. One of the graphs, called a descriptive graph, represents the way the speech acts were actually brought forward by the agents, as far as they can be reconstructed from the text of discourse in the case. The other graph, called the normative graph, represents the way the sequence of speech acts should have ideally gone according to the protocols for the type of dialogue. By comparing the two graphs an analyst can conduct a full diagnostic procedure to determine where the dialogue went wrong in the actual case which was thought to be fallacious or otherwise problematic.

To have a fuller explanation of the fallacy in this instance, we can now look at Figure 2, which represents the normative profile of dialogue showing by contrast with the descriptive profile which way the sequence of argumentation should have ideally gone in order to prevent this kind of fallacy from arising.

In contrast with the profile shown in Figure 1, the sequence of argumentation in Figure 2 follows the protocol for persuasion dialogue. Look at what happens here when the argument from expert opinion is put forward by the proponent and the respondent asks the backup evidence question. At this juncture in the profile it is made clear that the proponent has two options following the request for evidence question, according to the burden of proof protocol. Each option has an outcome
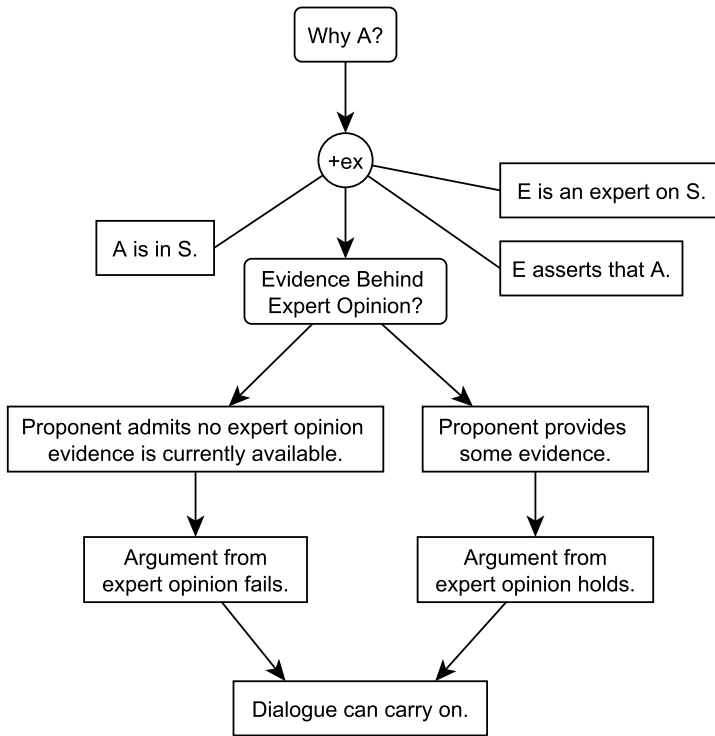
Figure 2. Normative profile of dialogue for problematic argument
from expert opinion

displayed in the graph. The outcome shown on the right path is that the
proponent wins if he supplies the proper evidence requested by the re-
spondent. The second outcome, shown on the left is that the proponent
loses, because he fails to offer the evidence sought by the questioner,
and therefore the argument from expert opinion fails. At this level, the
profile of dialogue shows the two speech acts the proponent is allowed to
respond with. In this way, the profile represents the proper sequence of
moves required by the dialogue protocols for the speech acts.

   To sum up, what is shown by the graph in Figure 2 are the correct
types of moves that the proponent and the respondent are allowed to
make, and how these moves are connected in a sequence. To carry on
further to conduct an evaluation of whether an *ad verecundiam* fallacy

has been committed in a real argument having the general outline of this profile, the normative profile has to be applied to a reconstruction of the actual sequence of dialogue shown in the descriptive profile. The normative profile draws on the protocol set by the rules of the normative model of dialogue, such as a persuasion dialogue. The dialogue is basically a persuasion type, because the proponent is trying to prove an ultimate claim, the proposition A, and therefore the proponent has the burden of persuasion set at the beginning of the dialogue. The respondent may also have a burden to prove the negation of proposition A, or in other cases may have the lesser task of playing the role of critic who wins if the proponent fails to carry out her burden of proof. The next example, a real example, shows what happens in a court of law. There is a shift from the central persuasion dialogue to an examination interval during which the expert is being cross-examined by the opposing attorney.

6. A Case of Cross-examining an Expert Witness

An engineer, Bob Zeidman, creator of a program for synthesizing software source code and president of an engineering corporation that is a leading provider of software intellectual property analysis tools, participated in a legal case that was mainly decided on an evidential basis of expert witness testimony [33]. Zeidman called it the case of the arrogant expert. Zeidman's client in the case was a small company that had invented a transistor circuit that could be used to replace previous devices that were more complex and more expensive to produce. Subsequently a big company bought a similar patent from a small company and used their technology, allegedly protected by this patent, to make the same kinds chips. However, Zeidman's client, the small company, took the case to court arguing that the large company's patent was invalidated by this earlier patent.

To defend their side, the large company hired an expert in electronics who held over 100 patents and had degrees from MIT and Stanford, including a PhD in electrical engineering. Zeidman had the task of examining this extremely well-qualified and impressive expert in a deposition. This expert produced a highly detailed report describing several patents that he claimed invalidated the patent of the small company. Most of the patents cited by the large company could be easily shown to not be similar enough to the small company's patent to invalidate it. But

there was one that appeared to be similar enough to present a real danger to the case of the small company. Zeidman carefully examined the technical details of this particular patent for some time, and figured out that the description of the circuit in the patent described in it showed that the voltages on either side of the transistor canceled each other out. From this evidence he concluded that the circuit described in this patent could not possibly work. That would mean that the key patent of the large company was 'non-enabling' [33] and therefore that their claim of a patent violation would fail.

This case is a fairly complex one, not only legally but also because of the complex technology involved. Those of us not familiar with extended intellectual property disputes about patents on software will undoubtedly find it hard to follow sequence of argumentation that framed the legal dispute. For this reason before introducing the expert testimony to be modeled by the profile of dialogues technique, we present a descriptive argument diagram in Figure 3 to give the reader an outline of the main argumentation in the case.

The argument from expert opinion that is the starting point of the argumentation in the case is shown at the top. E, a highly qualified expert, reported several patents that he claimed invalidated the patent of the small company. Based on this argument from expert opinion, the conclusion that the large company's patent is invalidated by the earlier patent of the small company would fail. This argument led to a line of investigation by Zeidman (Z), who had carefully gone through all of the patents listed by the expert and concluded that none of them were similar enough to the patent of the small company to invalidate their patent. However, Zeidman did find one that appeared to be similar enough to potentially defeat the argument of the small company. But once he investigated the patent of the large company further, he found a serious technical problem with it. The voltages on either side of the transistor canceled each other out, so that the transistor could not possibly work. Zeidman concluded from this investigation that the circuit described in this patent could not work. Since the patent of the small company did work, as shown by its success in the marketplace, the conclusion can be drawn that the key patent in the expert's list is non-enabling. The conclusion can be drawn from this line of investigation is that the expert's claim of patent violation is weakened. The entire line of argument based on Zeidman's investigation provides a counterargument attacking the expert's original conclusion that the large company's patent fails

to be invalidated by the small company's earlier patent. It is within this framework of argumentation that we can turn to the details of the testimony of the expert in the deposition.

The lawyer who conducted the examination of the expert in the deposition was not only an engineer, but also highly experienced in cases of detection of software intellectual property theft. He asked careful questions to try to get the expert to explain how the circuit worked, but the expert was often condescending in his replies. The two parties became engaged in long technical discussions, and in the end the expert tried to avoid responsibility for designing a circuit that didn't work. After two hours of examination, he finally had to admit that, but then claimed that it was the attorneys wrote the report on the patent, and he had simply advised them on how to write it. This was a dangerous admission, because it was his responsibility as the expert to write up the technical report. But he couldn't bring himself to admit that he had made a mistake.

During the deposition, the expert answered the questions put to him, but took very long pauses and snapped at the lawyer whenever he was interrupted, claiming that he hadn't finished answering. In the end, the deposition went on for exactly seven hours. The expert knew that there was a rule in the *Federal Laws of Civil Procedure* stating that a deposition cannot last longer than seven hours. At that point, he quickly left the room, refusing to answer a request for further clarification of some of his answers.

During the deposition, shown in the three rectangle with rounded corners at the bottom left of Figure 3, the expert several times exhibited a condescending attitude toward the questioner by putting forward speech acts that are evidence of a series of attempts to intimidate the questioner and block off dialogue instead of providing helpful answers.

Note that in Figure 4 the moves on the left of the profile are all the moves of the lawyer interviewing the expert. The moves on the right of the profile are all the moves of the expert who is being interviewed, except for the last two rectangles at the bottom right. These two rectangles have to do with the continuing of the dialogue, an important factor for using the profile to discuss, evaluate and repair potential instances of the *ad verecundiam* fallacy.

In what follows, we show how the profile of dialogue method outlined in the previous section may serve as a tool of analyzing the argumentation in this case. The descriptive profile of dialogue shows a problem
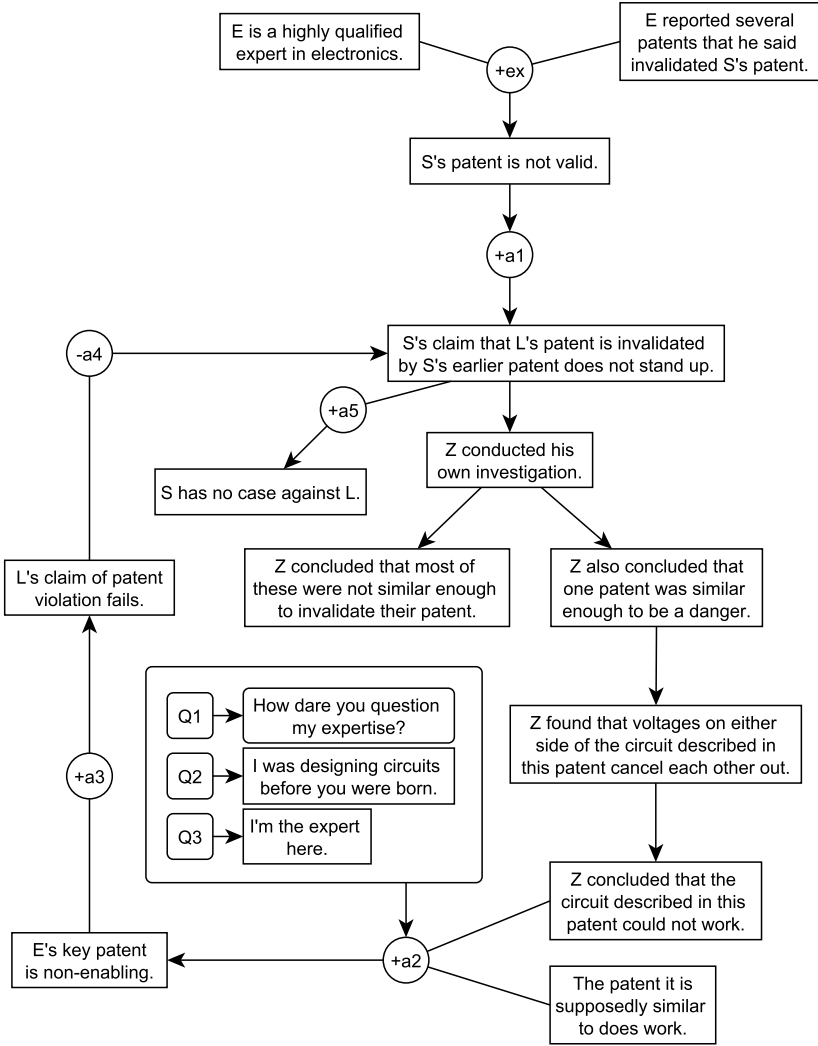
Figure 3. Descriptive profile for the arrogant expert case

that needs to be solved if the facts are to be brought out and under-stood in such a manner that the argument of the small company can find an evidential basis for casting doubt on the claim made by the large company that its key patent anticipated and was similar enough to the
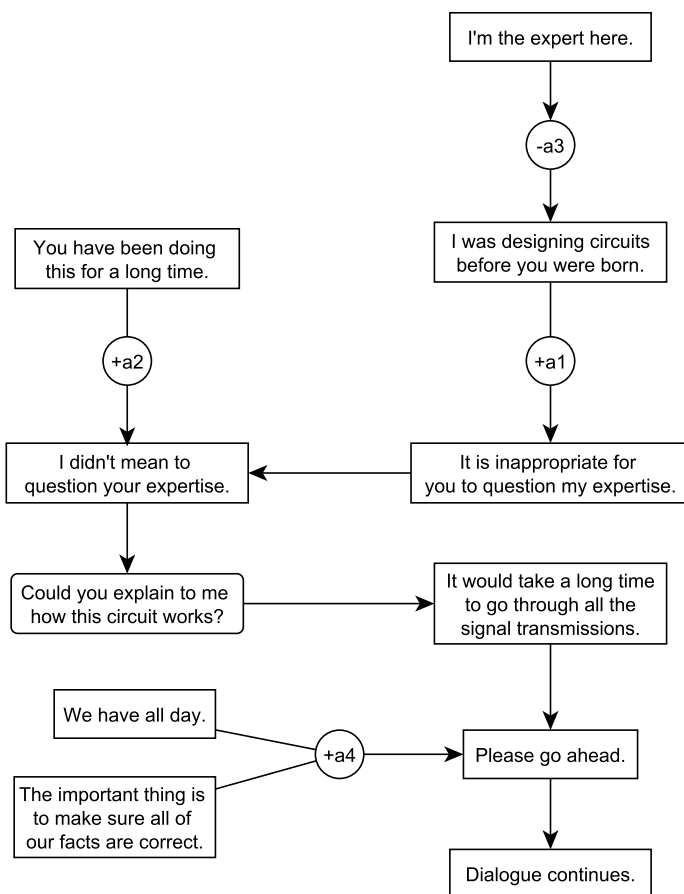
Figure 4. Normative profile for the arrogant expert case

device used by the small company. It is the job of lawyer who conducts the deposition by examining the expert of the large company to try to get him to offer a comprehensible explanation of how the device described by his patent works.

From the textual evidence we do have, it can be seen that the way that *L* responds to each of these dangerous moves is to defuse them by offering modest replies that, instead on inviting further confrontation, mildly and co-operatively steer the dialogue back onto a constructive course. How *L* carried this out is shown in Figure 4.

The sequence represented in Figure 4 not only records *L*'s actual replies. It can also be taken to represent a normative ideal of how the dialogue should go if it is to succeed in accomplishing its goal of resolving the conflict of opinions set at the opening stage. At each of the three moves, *L* is attacked as being immodest if he tries to question the expert at all. Instead of rising to the bait and attacking *E* as being immodest himself, *L* mildly clarifies his intentions, conceded politely that *E* is indeed the expert, and deferentially asks for an explanation of how the system works. Instead of being derailed by *E*'s provocative moves, the dialogue is put back on track.

Now it can be seen how the comparison of figures 3 and 4 helps one to diagnose the central fault in the *ad verecundiam* fallacy. The key indicators of the *ad verecundiam* fallacy presented by the speech acts put forward by *E* during the dialogue were already shown in Figure 3. First there was the question, 'How dare you question my expertise?', in which *E* shows that he is demanding deference from *L*. Such a move in the dialogue is potentially a very powerful one in its effects over the dialogue. It attempts to nullify all the previous moves made by *L* and the evidence collected by *Z* in which he used evidence to show that the patent described by *E* had to be non-enabling because the circuit described by *E* simply didn't work. In other words, all the argumentation put forward by *Z* summarized in the argument diagram in Figure 3 is meant to be canceled out by *E*'s attack. By this means the whole examination dialogue in which *L* questioned *E* would be nullified by this attack if it were successful. The reason is that it would be shown to be evidentially inappropriate because *L* had no right to ask such questions at all. *E*'s attack also has an anticipatory effect as a strategic maneuver, by making any further attempts by *L* to question him equally inappropriate.

The second indicator was the statement that *E* was designing circuits before *L* was born. This argument is an attempt to disqualify anything said by *L*, on the grounds that *E*'s depth of knowledge on designing electronic circuits means that *L* could not possibly understand the technical details of the patent, suggesting the conclusion that anything that he said or might say in the future in the trial is worthless as evidence, or even unworthy of consideration at all. The third speech act was *E*'s statement, 'I'm the expert here', reaffirming the force of the previous two speech acts.

What Figure 3 shows when compared with Figure 4 is that there is a repair process available for the plaintiff to deal with such a tricky and

dangerous situation that so badly compromises its capability to make a case for its side. So the comparison of Figure 3 with Figure 4 indicates not only the danger of the fallacy, and its potentially damaging effects on the conversational exchange, but also suggests a way that the damage can be repaired. The way illustrated in Figure 4 is for the questioner to indicate in his replies that he is not being immodest by doubting the expertise of the expert or trying to put himself in places someone who knows better than the expert, or as knowledge of the subject at issue greater than that of the expert.

Generally speaking the profiles of dialogue tool works by comparing two sequences of argumentation, where each sequence is represented as a directed graph structure of argument moves and counter-moves that can be linear or branching. The descriptive tree represents an interpretation of how the sequence of argumentation supposedly went, as reconstructed from the given text. The other graph represents a normative model showing how the sequence of argumentation should have gone in order to successfully deal with the problem posed in the first graph. When the two directed graphs, are compared, the comparison of the two profiles can be used together as a method of fault diagnosis. The fault in this case is revealed as the attempt to suppress the dialogue by the expert's anticipatory moves that block off or interfere with the proper moves that should normally be next taken by the responding party. The fault can be diagnosed by showing how this blocking off effect can be dealt with and overcome so that the dialogue can properly move forward towards its proper goal.

7. Reconfiguring the *Ad Verecundiam* Fallacy

This analysis using the profiles method reveals how, at least in this case, *ad verecundiam* works as a fallacy. In this case, the diagnosis is that the argument from expert opinion is not merely weak, by failing to meet all the requirements of the scheme, or by inadequately responding to a critical question. The fallacy is revealed to be a strategic maneuver of trying to get the best of a speech partner unfairly by interfering with his attempts to even ask critical questions, or otherwise conduct a proper examination dialogue.

But an objection to our analysis might be made by claiming that the only profile that captures this effect of stalling questioning is one

where the addressee responds to the argument by accepting the arguer's assertion on the basis of its attribution to the source. The fallacy in this kind of case would be for the addressee to accept a weak or poorly unsubstantiated argument from expert opinion rather than even making any attempt to critically question it, or point out ways in which either the required premises of the scheme are not stated, or where critical questions about the argument are not even posed. This certainly could be a failure of the argument from expert opinion associated with the *ad verecundiam* fallacy even though it does not represent the target failure to which our analysis using the profiles method is addressed. This objection raises the possibility that there could be kinds of failures associated with the *ad verecundiam* fallacy other than the one identified by our use of the profiles method.

Walton [24, Ch. 8], after conducting a survey of the treatments of the *ad verecundiam* fallacy in the logic textbooks and in the other literature on the fallacy, came to the conclusion that there were two types of faults of reasonable argument associated with it. The one type of fault was described as an error in using the argumentation scheme for the argument from expert opinion. For example, an argument from expert opinion could suffer from the fault that the proponent putting it forward did not even cite the name of the expert source. Another error of the same type would be a failure to answer a critical question. For example the proponent's argument might fail to answer the critical question of what evidence the claim of the expert was based on. When committing this type of error, the addressee of the argument from expert opinion jumps too quickly to acceptance of the conclusion. Diagnosing and repairing this type of error does not require use of the profiles technique. As pointed out in the introductory section of this paper, the argumentation scheme with its matching set of critical questions is sufficient. It is the other type of failure that has not been addressed well enough yet by the literature.

The other type of failure is committed by the dogmatic arguer who presses forward with the argument from expert opinion too dogmatically and aggressively by forestalling critical questioning of the argument or preventing counter-arguments from even being put forward. It is this type of failure that we have analyzed using the profile of dialogues tool. To accommodate these objections, we recognize that there can be at least two different kinds of failure associated with the *ad verecundiam* fallacy and that our analysis of the fallacy using the profiles technique presents is only a model of one of these, namely the second one. We do not say

this limitation is a problem, however, because this type of fallacy is by far the harder of the two variants to model in a way that exhibits it as a logical failure that can be objectively diagnosed and evaluated.

The strategic maneuver [19] characteristic of *ad verecundiam* is modeled by the profile of dialogue, a graph structure to show how the unfair interfering works by showing how it blocks the proper order of the speech acts of questioning and replying in a dialogue that has a protocol consisting of rules that regulate the turn-taking and the putting forward of speech acts. This is the objective structure used to explain how the fallacy works as a device of strategic maneuvering. When we say such a maneuver is trying to get the best of a speech partner unfairly, the unfairness aspect is not a moralistic objection. It is an objection based on the dialogue protocol. In other words, it is modeled as a violation of the rules of proper procedure governing moves allowed in the dialogue. Our model of this fallacy is based on the literature on formal models of argumentation, such as [30, 31]. Our analysis assumes the existence of such formal argumentation models, and fits into them by building a heuristic (the profiles tool) that can handily be applied by argumentation researchers to examples where *ad verecundiam* is suspected. The tool is meant to be a useful alternative to using the full-blown formal dialogue model with all of its protocols.

According to the pragma-dialectical theory [19, p. 197], the procedure for analyzing and evaluating arguments in a text suspected to contain a fallacy begins with identifying the moves made in the text as a particular kind of speech act which creates commitments for the arguer. Moreover, on this theory, the allegedly fallacious argument is evaluated by reconstructing the speech act to see if it proves to violate one of the dialogue rules applicable to the case. Strategic maneuvering is permissible in the critical discussion, which can be classified here as a type of persuasion dialogue, but contextual factors are important in the evaluation of whether an argument is fallacious or not, because strategic maneuvering may involve a sequence of moves. Ultimately then, on this approach [19, p. 203] fallacy judgments are contextual judgments that always relate to strategic maneuvering in the specific circumstances of a given case.

Our model of the kind of fallacy committed in (some) *ad verecundiam* arguments using the profiles method comes under what van Eemeren [19, p. 198] calls 'fallacious strategic maneuvering'. It is not a mere error of reasoning but a sophistical strategy used to deceive a speech partner.

The profiles method is a useful tool for diagnosing and repairing this kind of *ad verecundiam* fallacy. Apart from identifying the fallacious instances of arguments from expert opinion, the more general aim of applying the profiles of dialogue method is to provide a structure that can be used to investigate strategic maneuvering. This task requires a formal dialectical structure, and in addition, an adaption of the structure to a simpler form, such as the graph structure of the profiles of dialogue technique as proposed in this paper, that can be used to track the sequence of speech acts in a dialogue through the various moves.

By allowing us to identify a fallacy as a particular sequence of dialogue moves, the profiles method offers also a profile-of-dialogue approach to the concept of informal fallacy. Instead of concentrating on the negative aspect of using the concept of fallacy as merely a device for spotting the logical error in someone's argument, the profiles method offers the possibility of not only diagnosing the error or shortcoming, but also the capability of showing the other party how to diagnose and repair her argument so that it can be improved.

So conceived, fallacy becomes more than just a device for putting somebody down. The fallacious sequence of dialogue moves becomes a constructive device for argument diagnosis and repair. For this reason, adopting the profiles method suggests a much better approach to the concept of fallacy that departs from the negative approach inherent in the traditional textbook treatments criticized by Hamblin [8]. Once the profiles approach has been accepted, it becomes outmoded to talk about the *ad verecundiam* as a 'gotcha' move to attack an opponent for having committing a fallacy.

Using this method we are able to achieve a more balanced approach to arguments from expert opinion that sees them as very often reasonable but subject to a variety of correctable faults that can be diagnosed and repaired as they occur (or not) in specific cases. The argument analyst compares the two graphs to examine and analyze what was missing or inappropriate in the descriptive graph, and by moving to the normative graph can diagnose the nature of the problem and build a recommendation on how to fix it. The profiles method enables us to go beyond merely identifying the problem, for example by associating it with a traditional informal fallacy category, but also to go beyond that to finding a way to repair the fault. The beauty of the profiles method is that works as a fault diagnosis tool that can not only find a fault, but also show how it can be fixed.

8. Conclusions

In this paper it has been shown that the existing argumentation scheme approach to arguments from expert opinion, although it is vitally important in identifying the structure of appeals to expert authority, does not do full justice to grasping the complexity of an *ad verecundiam* technique. As we have argued, a thorough examination of the sequence of speech acts in the dialogue profile of an *ad verecundiam* technique is helpful in exposing not only its failure to meet the requirements of the argumentation scheme for argument from expert opinion, but also for grasping how it is a dialectical failure that is used to suppress critical questioning and counter arguments in order to block the argumentation off from getting further toward its legitimate goal.

The profiles method works by comparing two sequences of dialogue. The descriptive sequence represents how the dialogue actually went, by displaying the interconnected moves and counter moves that can be reconstructed from the text in a given case. The normative sequence represents how the dialogue ideally should have gone, in order for the fault to be overcome and dealt with appropriately. By juxtaposing the one graph with the other, the fallacious *ad verecundiam* argument can not only be diagnosed as a fault in argumentation but also the means for repairing the fault are given.

Previously, dialectical profiles have been used as analytical representations, for example by the pragma-dialectical school, to represent all analytically possible moves in an ideal discussion called the critical discussion. But this use of profiles does not show how existing formal dialogue structures can be applied to the analysis and evaluation of real cases of the *ad verecundiam* fallacy. What we have devised is a practical tool for the analysis of given cases where an *ad verecundiam* fallacy is suspected. This tool derives from the formal models of dialogue in the literature, such as [30]. It works, as we have shown, by comparing a normative profile to a descriptive profile. The problem posed by this earlier literature was that the elaborate apparatus of formal dialogue structures, in which each individual formal dialogue type has its own particular protocol, it is simply too unwieldy for students of informal logic and other users of argumentation to easily apply, even with significant training. Our version of the profiles tool defines it formally as a graph structure, but a simple one that can handily be applied to problems of analyzing and evaluating real arguments in natural language

discourse without having to explicitly bring in all the protocols of the applicable formal dialogue structures that are there in the background. The application of the tool also reveals a means for repairing the fault.

Technically, profiles of dialogue are very close to the dialogue templates used by Bex and Reed [2] as schematic representations that combine argument structures with transitions in the dialogue from a move to a reply. Dialogue templates look very much like the profiles in this paper, and they are visualized as graphs that look somewhat like familiar argument diagrams except that they represent dialogue sequences in formal dialogues such as CB.[2] If we look back to Figure 3, the dialogue shown at the bottom left in the large rounded rectangle node can be seen as a dialogue template. Further research is needed to establish the exact relationship between dialogue templates and profiles of dialogue. It would appear that profiles work in a comparable way to dialogue templates that can also incorporate arguments in some instances.

In particular, it has been shown that some real life examples of examination dialogues (as illustrated by the Zeidman example) illustrate how the profiles technique can successfully be applied to cases where the sophistical tactics type of *ad verecundiam* strategic maneuvering is a highly powerful and dangerous type of argumentation. This particular example is a very interesting one because it brings out a novel and heretofore largely uninvestigated aspect of the *ad verecundiam* fallacy. Our findings provide evidence to suggest that widening our horizons on how to study this fallacy will enable argument analysts to tackle very important cases that are highly worthwhile to study when one realizes the problems they give rise to.

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[2] The dialogue system CB [22, pp. 133–135] consists of locution rules (that determine permissible locutions, withdrawals, questions and challenges), commitment rules (that indicate e.g. when a statement can be included in or withdrawn from a player's commitment store) and dialogue rules (that state what is the proper sequence of dialogue moves).

comments that were very helpful in preparing our final version of the
paper.

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